

WHAT IS CLAIMED IS:

1. An antibody that binds to tumor tissue, wherein the antibody binds to an extracellular RNA-protein complex and wherein the antibody comprises:

a heavy chain variable (V_H) region comprising:

an HCDR1 comprising a sequence GFTFSKAWMS (SEQ ID NO:1);
~~or a variant HCDR1 in which 1 amino acid is substituted relative to the sequence;~~

an HCDR2 comprising a sequence RIKSVTDGETTDYAAPVKG
(SEQ ID NO:9); ~~or a variant HCDR2 in which 1 amino acid is substituted relative to the sequence;~~ and

an HCDR3 comprising a sequence
TSSFCCRGGSCPSHDTSYCGGQYKSYYYMDV (SEQ ID NO:21); ~~or a variant HCDR3 in which 1, 2, or 3 amino acids are substituted relative to the sequence;~~ and

a light chain variable (V_L) region comprising:

an LCDR1 comprising a sequence SGSSSNIGSSSVS (SEQ ID NO:48); ~~or a variant LCDR1 in which 1 amino acid is substituted relative to the sequence;~~

an LCDR2 comprising a sequence KNNQRPS (SEQ ID NO:59); ~~or variant LCDR2 in which 1 amino acid is substituted relative to the sequence;~~ and

an LCDR3 comprising a sequence STWDDSLSVRV (SEQ ID NO:68); ~~or a variant LCDR3 in which 1 amino acid is substituted relative to the sequence.~~

2. ~~The antibody of claim 1, wherein the antibody comprises an HCDR1 comprising a sequence GFTFSKAWMS (SEQ ID NO:1), an HCDR2 comprising a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9), an HCDR3 comprising a sequence TSSFCCRGGSCPSHDTSYCGGQYKSYYYMDV (SEQ ID NO:21), an LCDR1 comprising a sequence SGSSSNIGSSSVS (SEQ ID NO:48), an LCDR2 comprising a sequence KNNQRPS (SEQ ID NO:59), and an LCDR3 comprising a sequence STWDDSLSVRV (SEQ ID NO:68).~~

3. The antibody of claim 2, wherein the V_H comprises an amino acid sequence having at least 95% identity to
EVQLVESGGALVKPGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI

KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC
CRGGSCPSHDTSYCGGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:94); and
the V_L comprises an amino sequence having at 95% identity to
QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL
TVL (SEQ ID NO:140).

43. The antibody of claim 31, wherein the V_H comprises a sequence
EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI
KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC
CRGGSCPSHDTSYCGGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:94); and
the V_L comprises a sequence
QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL
TVL (SEQ ID NO:140).

54. The antibody of any one of claims 1 to 43, wherein the antibody
comprises a heavy chain constant region sequence of SEQ ID NO:1721 and a light
chain constant region sequence of SEQ ID NO:1722.

65. The antibody of claim 54, wherein the heavy chain comprises a
sequence of SEQ ID NO:1723 and the light chain comprises a sequence of SEQ ID
NO:1724.

6. An expression vector comprising a polynucleotide encoding the V_H
region and/or the V_L region of the antibody of any one of claims 1 to 5.

7. A host cell comprising a polynucleotide that encodes the V_H region
and the V_L region of the antibody of any one of claims 1 to 5.

8. A method of producing an antibody, the method comprising culturing a
host cell of claim 7 under conditions in which the polynucleotide encoding the heavy
chain and the polynucleotide encoding the light chain are expressed.

~~7. An antibody that binds to tumor tissue, wherein the antibody binds to
an extracellular RNA-protein complex and wherein the antibody comprises an~~

~~HCDR1, HCDR2, HCDR3, LCDR1, LCDR2, and LCDR3 designated as AIP 192482, AIP 171142, AIP 165430, AIP 189526, AIP 122563, AIP 158623, AIP 155066, AIP 166120, AIP 133645, AIP 187893, AIP 142079, AIP 102396, AIP 150055, AIP 167084, AIP 185304, AIP 134770, AIP 141887, AIP 196203, AIP 128195, AIP 116579, AIP 192329, AIP 197809, AIP 142489, AIP 167726, AIP 199834, AIP 143179, AIP 195587, AIP 153462, AIP 115363, AIP 151090, AIP 168083, AIP 161082, AIP 114196, AIP 189338, AIP 183190, AIP 110143, AIP 147176, AIP 134312, AIP 128243, AIP 156172, AIP 147389, AIP 124314, AIP 185291, AIP 135247, AIP 113513, AIP 102299, AIP 179097, AIP 109343, AIP 119622, AIP 191735, AIP 157078, AIP 153475, AIP 133650, AIP 190915, AIP 167400, AIP 109729, AIP 151709, AIP 136628, AIP 101601, AIP 146871, AIP 170053, AIP 199483, AIP 162041, AIP 180675, AIP 183133, AIP 191470, AIP 151167, AIP 106633, AIP 102624, AIP 109484, AIP 126080, AIP 161571, AIP 163039, AIP 101235, AIP 182061, AIP 181246, AIP 192216, AIP 171912, AIP 172872, AIP 167833, AIP 190051, AIP 145518, AIP 167533, AIP 112580, AIP 143155, AIP 119664, AIP 190526, AIP 114403, AIP 156760, AIP 103803, AIP 195588, AIP 145722, AIP 178251, AIP 116142, AIP 183350, AIP 127108, AIP 128147, AIP 109510, AIP 104086, AIP 143132, AIP 170105, AIP 169636, AIP 152243, AIP 138776, AIP 103817, AIP 130491, AIP 188155, AIP 167246, AIP 106139, AIP 198351, AIP 159326, AIP 192275, AIP 190761, AIP 166832, AIP 148062, AIP 129145, AIP 111240, AIP 153888, AIP 130915, AIP 109048, AIP 170569, AIP 154873, AIP 159037, AIP 186826, AIP 156514, AIP 157122, AIP 173276, AIP 150485, AIP 166847, AIP 124013, AIP 126285, AIP 168605, AIP 190274, AIP 136060, AIP 180422, AIP 166722, AIP 127782, AIP 189473, AIP 192571, AIP 112328, AIP 125258, AIP 150199, AIP 125062, AIP 177193, AIP 115388, AIP 107759, AIP 170221, AIP 143369, AIP 189475, AIP 102833, AIP 157045, AIP 175775, AIP 154181, AIP 125984, AIP 160829, AIP 184744, AIP 128136, AIP 181273, AIP 153125, or AIP 131972 in Table 1A and 2A, or a variant thereof in which at least one, two, three, four, five, or all six of the CDRs contain 1 or 2 amino acid substitutions compared to the corresponding CDR sequence shown in Table 1B or Table 2B.~~

8 — The antibody of claim 7, wherein the antibody comprises an HCDR1, HCDR2, HCDR3, LCDR1, LCDR2, and LCDR3 of an antibody designated as AIP

~~192482, AIP-171142, AIP-165430, AIP-189526, AIP-122563, AIP-158623, AIP-155066, AIP-166120, AIP-133645, AIP-187893, AIP-142079, AIP-102396, AIP-150055, AIP-167084, AIP-185304, AIP-134770, AIP-141887, AIP-196203, AIP-128195, AIP-116579, AIP-192329, AIP-197809, AIP-142489, AIP-167726, AIP-199834, AIP-143179, AIP-195587, AIP-153462, AIP-115363, AIP-151090, AIP-168083, AIP-161082, AIP-114196, AIP-189338, AIP-183190, AIP-110143, AIP-147176, AIP-134312, AIP-128243, AIP-156172, AIP-147389, AIP-124314, AIP-185291, AIP-135247, AIP-113513, AIP-102299, AIP-179097, AIP-109343, AIP-119622, AIP-191735, AIP-157078, AIP-153475, AIP-133650, AIP-190915, AIP-167400, AIP-109729, AIP-151709, AIP-136628, AIP-101601, AIP-146871, AIP-170053, AIP-199483, AIP-162041, AIP-180675, AIP-183133, AIP-191470, AIP-151167, AIP-106633, AIP-102624, AIP-109484, AIP-126080, AIP-161571, AIP-163039, AIP-101235, AIP-182061, AIP-181246, AIP-192216, AIP-171912, AIP-172872, AIP-167833, AIP-190051, AIP-145518, AIP-167533, AIP-112580, AIP-143155, AIP-119664, AIP-190526, AIP-114403, AIP-156760, AIP-103803, AIP-195588, AIP-145722, AIP-178251, AIP-116142, AIP-183350, AIP-127108, AIP-128147, AIP-109510, AIP-104086, AIP-143132, AIP-170105, AIP-169636, AIP-152243, AIP-138776, AIP-103817, AIP-130491, AIP-188155, AIP-167246, AIP-106139, AIP-198351, AIP-159326, AIP-192275, AIP-190761, AIP-166832, AIP-148062, AIP-129145, AIP-111240, AIP-153888, AIP-130915, AIP-109048, AIP-170569, AIP-154873, AIP-159037, AIP-186826, AIP-156514, AIP-157122, AIP-173276, AIP-150485, AIP-166847, AIP-124013, AIP-126285, AIP-168605, AIP-190274, AIP-136060, AIP-180422, AIP-166722, AIP-127782, AIP-189473, AIP-192571, AIP-112328, AIP-125258, AIP-150199, AIP-125062, AIP-177193, AIP-115388, AIP-107759, AIP-170221, AIP-143369, AIP-189475, AIP-102833, AIP-157045, AIP-175775, AIP-154181, AIP-125984, AIP-160829, AIP-184744, AIP-128136, AIP-181273, AIP-153125, or AIP-131972 in Table 1A or 2A.~~

9. — An antibody that binds to tumor tissue, wherein the antibody binds to an extracellular RNA-protein complex and wherein the antibody comprises:

(a) a heavy chain variable region comprising:

(i) an HCDR1 having the sequence GF(T/V)(F/Y)(S/A) X_6 AWM(S/T) (SEQ ID NO:1728), wherein X_6 is K, A, or M;

(ii) an HCDR2 having the sequence of
RIK(S/A)X₅X₆(D/E)(G/A)X₉X₁₀T(D/E)YAA(P/S)VKG (SEQ ID NO:1729),
wherein X₅ is V, N, A, or T; X₆ is T, Q, S, D, or H; X₉ is E, H, K, or G; and
X₁₀ is T, Q, or I; and

(iii) an HCDR3 having the sequence of
(I/T)(S/T)SFCC(H/R)(G/S)X₉X₁₀CPSX₁₄(D/E)TS(F/Y)CX₂₀(G/N)X₂₂
X₂₃X₂₄X₂₅(F/Y)Y(F/Y)(M/V)(D/N)X₃₁ (SEQ ID NO:1730), wherein X₉ is A,
G, K, or N; X₁₀ is N, Q, R, or S; X₁₄ is H, R, or S; X₂₀ is A, G, or N; X₂₂ is Q,
S, or Y; X₂₃ is D, F, N, or Y; X₂₄ is A, K, N, P, or S; X₂₅ is D, Q, R, or S; X₁₉
is D or N; and X₃₁ is I, P, or V; and

(b) a light chain variable region comprising:

——(i) an LCDR1 having the sequence of
SG(S/A)X₄(S/T)(N/D)IGSSX₁₁VX₁₃ (SEQ ID NO:1731), wherein X₄ is S, P,
or K; X₁₁ is S, Y, or T; and X₁₃ is S, Y, or T;

——(ii) an LCDR2 having the sequence of
(K/M)(N/D)X₃X₄R(P/A)X₇ (SEQ ID NO:1732), wherein X₃ is S, N or T; X₄ is
L, Q, or A; X₅ is P or A; X₇ is Q, S, Y, or L; and

——(iii) an LCDR3 having the sequence of
(S/A)(T/S)W(D/N)X₅X₆(L/N)X₈(V/I)R(V/I) (SEQ ID NO:1733), wherein X₅
is E, D or N; X₆ is S, A, or Q; and X₈ is N, S or T.

10. —The antibody of claim 9 wherein:

the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1),
GFTFSAAWMS (SEQ ID NO:4), or GFTFSKAWMT (SEQ ID NO:8);

the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9) or
RIKSTSDGETTDYAAPVKG (SEQ ID NO:15);

the HCDR3 has a sequence TSSFCCRGGSCPSSDTSYCGGQYKSYYFMDV
(SEQ ID NO:32), TSSFCCRSGSCPSSDTSYCNGQYKSYYYMDV (SEQ ID
NO:20), TSSFCCRGNQCPSSDTSYCGGQYPSYYYMDP (SEQ ID NO:23),
ISSFCCRGGSCPSRDTSYCGGQYKSYYFMDV (SEQ ID NO:30),
ISSFCCRGNSCPSSDTSYCNGQYKSYYYMDV (SEQ ID NO:27),
TSSFCCRGGSCPSHDTSYCGGQYKSYYYMDV (SEQ ID NO:21), or
TSSFCCRGGSCPSHDTSFCCGGQDKRYYYMDV (SEQ ID NO:34);

the LCDR1 has a sequence ~~SGSSSNIGSSSVY (SEQ ID NO:56),~~
~~SGSSSNIGSSSVS (SEQ ID NO:48),~~ ~~SGSSTNIGSSSVS (SEQ ID NO:54),~~ or
~~SGSKSNIGSSSVS (SEQ ID NO:51);~~

the LCDR2 has a sequence ~~KNNQRPS (SEQ ID NO:59) or KDNQRPS (SEQ~~
~~ID NO:62);~~ and

the LCDR3 has a sequence ~~STWDDALSVRV (SEQ ID NO:72),~~
~~STWDDSLSVRV (SEQ ID NO:68),~~ ~~SSWDDNSVRI (SEQ ID NO:71),~~ or
~~ATWDNSLSIRV (SEQ ID NO:70).~~

11. — The antibody of claim 10, wherein the heavy chain variable region has
a sequence having at least 90% identity to the sequence of any one of
~~EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI~~
~~KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC~~
~~CRGGSCPSSDTSYCGGQYKSYYFMDVWGKGTTVTVSS (SEQ ID NO:92);~~
~~EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI~~
~~KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC~~
~~CRSGSCPSSDTSYCNGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:77);~~
~~EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI~~
~~KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC~~
~~CRGNQCPSSDTSYCGGQYPSYYYMDPWGKGTTVTVSS (SEQ ID NO:80);~~
~~EVQLVESGGALVKPGGSLRLSCAASGFTFSAAWMSWVRQAPGKGLEWVGRI~~
~~KSTSDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCISSFCC~~
~~RGGSCPSRDTSYCGGQYKSYYFMDVWGKGTTVTVSS (SEQ ID NO:90);~~
~~EVQLVESGGALVKPGGSLRLSCAASGFTFSAAWMSWVRQAPGKGLEWVGRI~~
~~KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCISSFCC~~
~~RGNSCPSSDTSYCNGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:86);~~
~~EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI~~
~~KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC~~
~~CRGGSCPSHDTSYCGGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:94);~~ and
~~EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMTWVRQAPGKGLEWVGRI~~
~~KSVTDGETTDYAAPVKGRFTISRDDSKSVLYLQMSSLKTEDTAVYFCTSSFCC~~
~~RGGSCPSHDTSFCCGQDKRYYYMDVWGKGTTVTVSS (SEQ ID NO:95).~~

12. ~~The antibody of claim 10 or 11, wherein the light chain variable region has a sequence having at least 90% identity to the sequence of any one of~~
~~QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVYWYQQLPGTAPKLLIYKNNQ~~
~~RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDALSVRVFGGGTKL~~
~~TVL (SEQ ID NO:138);~~
~~QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ~~
~~RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL~~
~~TVL (SEQ ID NO:140);~~
~~QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKDNQ~~
~~RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSSLWDDSNVRIFGGGTKL~~
~~TVL (SEQ ID NO:136);~~
~~QSVLTQPPSASGTPGQRVTISCSGSKSNIGSSSVSWYQQLPGTAPKLLIYKDNQ~~
~~RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCATWDNSLSIRVFGGGTKL~~
~~TVL (SEQ ID NO:132); and~~
~~QSVLTQAPSASETTPGQRVHSCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ~~
~~RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL~~
~~TVL (SEQ ID NO:141).~~

139. An antibody that binds to tumor tissue, wherein the antibody binds to an extracellular RNA-protein complex and ~~The antibody of claim 10, wherein:~~

(a)

the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1);
the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
the HCDR3 has a sequence TSSFCCRGGSCPSSDTSYCGGQYKSYFMDV (SEQ ID NO:32);
the LCDR1 has a sequence SGSSSNIGSSSVY (SEQ ID NO:56);
the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
the LCDR3 has a sequence STWDDALSVRV (SEQ ID NO:72); or

(b)

the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1);
the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
the HCDR3 has a sequence of TSSFCCRSGSCPSSDTSYCNGQYKSYYYMDV (SEQ ID NO:20);
the LCDR1 has a sequence SGSSSNIGSSSVS (SEQ ID NO:48);

the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
the LCDR3 has a sequence STWDDSLSVRV (SEQ ID NO:68);or

(c)

the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1);
the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
the HCDR3 has a sequence TSSFCCRGNGQCPSSDTSYCGGQYPSYYMDP (SEQ
ID NO:23);

the LCDR1 has a sequence SGSSSNIGSSSVS (SEQ ID NO:48);
the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
the LCDR3 has a sequence STWDDSLSVRV (SEQ ID NO:68); or

(d)

the HCDR1 has a sequence GFTFSAAWMS (SEQ ID NO:4);
the HCDR2 has a sequence RIKSTSDGETTDYAAPVKG (SEQ ID NO:15);
the HCDR3 has a sequence ISSFCCRGGSCPSRDTSYCGGQYKSYFMDV (SEQ
ID NO:30);

the LCDR1 has a sequence SGSSTNIGSSSVS (SEQ ID NO:54);
the LCDR2 has a sequence KDNQRPS (SEQ ID NO:62); and
the LCDR3 has a sequence SSWDDSNSVRI (SEQ ID NO:71) or

(e)

the HCDR1 has a sequence GFTFSAAWMS (SEQ ID NO:4);
the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
the HCDR3 has a sequence ISSFCCRGNSCPSSDTSYCNGQYKSYYYMDV (SEQ
ID NO:27);

the LCDR1 has a sequence SGSKSNIGSSSVS (SEQ ID NO:51);
the LCDR2 has a sequence KDNQRPS (SEQ ID NO:62); and
the LCDR3 has a sequence ATWDNSLSIRV (SEQ ID NO:70); or-

(f)

the HCDR1 has a sequence GFTFSKAWMT (SEQ ID NO:8);
the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
the HCDR3 has a sequence TSSFCCRGGSCPSHDTSFCCGGQDKRYYYMDV (SEQ
ID NO:34);

the LCDR1 has a sequence SGSSSNIGSSSVS (SEQ ID NO:48);
the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
the LCDR3 has a sequence STWDDSLSVRV (SEQ ID NO:68).

10. The antibody of claim 9, wherein:

(a) the heavy chain variable region comprises a sequence

EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI
KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC
CRGGSCPSSDTSYCGGQYKSYYFMDVWGKGTTVTVSS (SEQ ID NO:92) and

the light chain variable region comprises a sequence

OSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVYQQLPGTAPKLLIYKNNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDALSVRVFGGGTKL
TVL (SEQ ID NO:138);

(b) the heavy chain variable region comprises a sequence

EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI
KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC
CRSGSCPSSDTSYCNGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:77) and

the light chain variable region comprises a sequence

OSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL
TVL (SEQ ID NO:140);

(c) the heavy chain variable region comprises a sequence

EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI
KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC
CRGNQCPSSDTSYCGGQYPSYYYMDPWGKGTTVTVSS (SEQ ID NO:80) and

the light chain variable region comprises a sequence

OSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL
TVL (SEQ ID NO:140);

(d) the heavy chain variable region comprises a sequence

EVQLVESGGALVKPGGSLRLSCAASGFTFSAWMSWVRQAPGKGLEWVGRI
KSTSDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCISSFCC
RGGSCPSRDTSYCGGQYKSYYFMDVWGKGTTVTVSS (SEQ ID NO:90) and

the light chain variable region comprises a sequence

OSVLTQPPSASGTPGQRVTISCSGSSTNIGSSSVSWYQQLPGTAPKLLIYKDNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSSWDDSNSVRIFGGGTKL
TVL (SEQ ID NO:136);

(e) the heavy chain variable region comprises a sequence
EVQLVESGGALVKPGGSLRLSCAASGFTFSAAWMSWVRQAPGKGLEWVGRI
KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCISFCC
RGNSCPSSDTSYCNGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:86) and

the light chain variable region comprises a sequence
QSVLTQPPSASGTPGQRTVISCSSGSKSNIGSSSVSWYQQLPGTAPKLLIYKDNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCATWDNSLSIRVFGGGTKL
TVL (SEQ ID NO:132); or

(f) the heavy chain variable region comprises a sequence
EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMTWVRQAPGKGLEWVGRI
KSVTDGETTDYAAPVKGRFTISRDDSKSVLYLQMSSLKTEDTAVYFCTSSFCC
RGGSCPSHDTSCGGQDKRYYYMDVWGKGTTVTVSS (SEQ ID NO:95) and

the light chain variable region comprises a sequence
QSVLTQAPSASETPGQRVIISSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL
TVL (SEQ ID NO:141).

~~14. — Use of an antibody of any one of claims 1 to 13 in the manufacture of a medicament for inducing an immune response.~~

~~15. — Use of the antibody of any one of claims 1 to 13 in the manufacture of a medicament for the treatment of a cancer patient having a tumor that comprises an extracellular RNA-protein complex.~~

~~16. — The use of claim 15, wherein the cancer is lung cancer, breast cancer, colorectal cancer, esophageal cancer, stomach cancer, kidney cancer, ovarian cancer, melanoma, uterine cancer, liver cancer, bladder cancer, or testicular cancer.~~

~~17. — The use of claim 16, wherein the cancer is non-small-cell lung cancer, triple negative breast cancer, colorectal cancer, ovarian cancer or melanoma.~~

~~18. — The use of any one of claims 15 to 17, further comprising administering chemotherapy and/or radiation therapy.~~

~~19. — The use of any one of claims 15 to 18, further comprising administering an agent that targets an immunological checkpoint antigen.~~

- ~~20. — The use of claim 19, wherein the agent is a monoclonal antibody.~~
- ~~21. — The use of claim 20, wherein the monoclonal antibody blocks PD-1 ligand binding to PD-1.~~
- ~~22. — The use of claim 21, wherein the monoclonal antibody is an anti PD-1 antibody.~~
- ~~23. — A method of identifying a patient that has a tumor comprising an extracellular RNA protein complex, the method comprising contacting a tumor sample from the patient with an antibody of any one of claims 1 to 13.~~
- ~~24. — An expression vector comprising a polynucleotide encoding the V_H region of the antibody of any one of claims 1 to 13.~~
- ~~25. — An expression vector comprising a polynucleotide encoding the V_L region of the antibody of any one of claims 1 to 13.~~
2611. An expression vector comprising a polynucleotide encoding the V_H region and w/or the V_L region of the antibody of ~~any one of claims 1 to 13~~ claim 9 or 10.
- ~~27. — A host cell comprising a polynucleotide that encodes the V_H region of the anti-tumor antibody of any one of claims 1 to 13.~~
- ~~28. — A host cell comprising a polynucleotide that encodes the V_L region of the anti-tumor antibody of any one of claims 1 to 13.~~
- ~~2912.~~ 2912. A host cell comprising a polynucleotide that encodes the V_H region and the V_L region of the anti-tumor antibody of ~~any one of claims 1 to 13~~ claim 9 or 10.
- ~~3013.~~ 3013. A method of producing an antibody, the method comprising culturing a host cell of claim ~~29-12~~ 2912 under conditions in which the polynucleotide encoding the heavy chain and the polynucleotide encoding the light chain are expressed.
- ~~31. — A method of identifying an antibody having anti-tumor activity, the method comprising mutagenizing a polynucleotide encoding a V_H or a V_L CDR3 of~~

~~an antibody of any one of claims 1 to 13, expressing an antibody comprising the mutagenized V_H or V_L-CDR3; and selecting an antibody that inhibits tumor growth or decreases tumor size, tumor invasion, and/or metastasis *in vivo*.~~

~~32~~14. A polypeptide comprising a V_H sequence

EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRI
KSVTDGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFC
CRGGSCPSHDTSYCGGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:94); and

a V_L sequence

QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQ
RPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKL
TVL (SEQ ID NO:140).